

✓ Use of the dynamic method for measuring the adsorption
of vapors to determine the size of the catalyst surface *A. Rub*
M. Rubinshtein and V. A. Afanas'ev. Invest. Akad. Nauk
S.S.S.R., Otdel. Khim. Nauk. 1956, 1294-303.—A simple

app. is described that can be used to det. the magnitude of a
catalyst surface by measuring the adsorption isotherm for
C₂H₄ on the surface at normal temps. and pressure. The
results by this method are compared with those obtained
in a high-vacuum app. The sources of error in this method
are discussed. *J. Rovtar Leach*

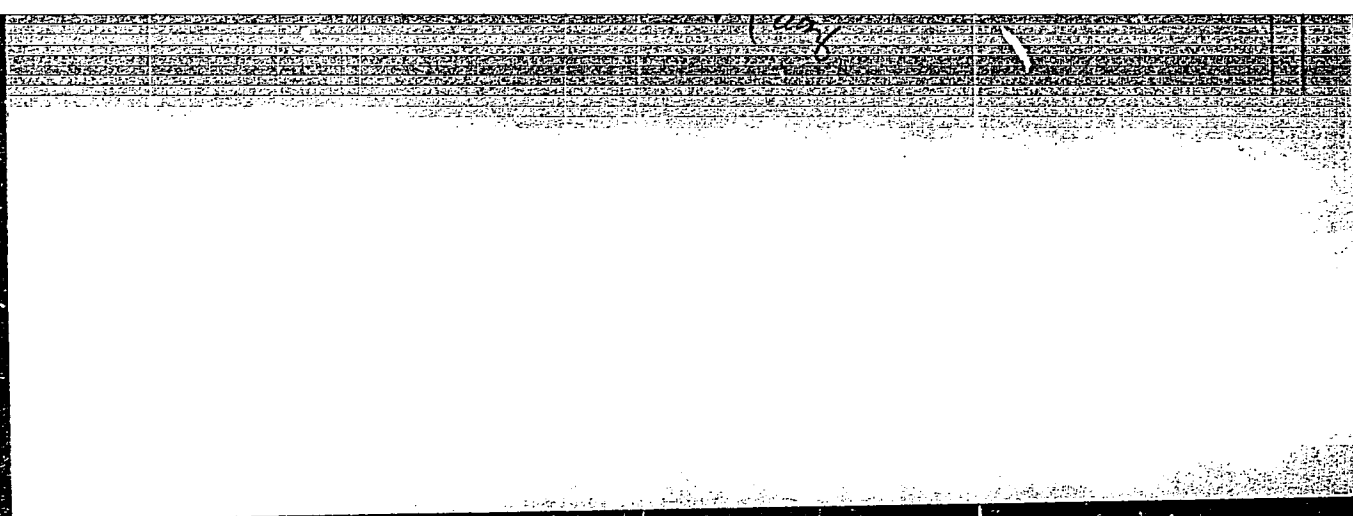
BALANDINA, V.A. [translator]; VYSOTSKIY, Z.Z. [translator]; BALANDIN, A.A.,
akademik, redaktor; RUBINSHTEYN, A.M., professor, redaktor; OGAND-
ZHANOVA, N.A., redaktor; BELEVA, M.A., tekhnicheskiy redaktor

[Advances in catalysis and related subjects. Translated from the
English] Kataliz, issledovanie gomogennykh protsessov. Perevod s
angliiskogo V.A.Balandin i Z.Z.Vysotskogo. Pod red. A.A.Balandina,
A.M.Rubinshteina. Moskva, Izd-vo inostr.lit-ry, 1957. 252 p.
(Catalysis) (MLRA 10:9)

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1537



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RUBINSHTEYN, A.M.
USSR/Physical Chemistry - Kinetics, Combustion, Explosions,
Topochemistry, Catalysis.

B-9

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 498
Author : A.M. Rubinshteyn, M.I. Dashevskiy, N.A. Pribytkova.
Inst : Academy of Sciences of USSR.
Title : Application of Method of Ultrathin Sections to Electronic
Microscopy of Catalysts.
Orig Pub : Izv. AN SSSR. Otd khim. n., 1957, No 4, 431-435
Abstract : The authors polymerize specimens in a mixture of methyl-
and butylmethacrylates (1 : 3) and make sections less
than 0.01 μ thick with a specially constructed micro-
tome from blocks prepared in the above manner. These
sections are used for electron-microscopic study of
highly dispersed catalysts.

Card 1/1

AUTHORS: Rubinshteyn, A. M.; Slinkin, A. A.; Afanasyev, V. A. 62-1-4/21

TITLE: Determination of the Size of the Specific Surface of Catalysts in Dynamic Conditions According to One Adsorption Equilibrium (Opredeleniye velichiny udel'noy poverkhnosti katalizatorov v dinamicheskikh usloviyakh po odnomu adsorbtsionnomu ravnovesiyu)

PERIODICAL: Izvestiya Akademii Nauk USSR, Otdeleniye Khimicheskikh Nauk, 1957, No. 1, pp. 32-36 (U.S.S.R.)

ABSTRACT: Experiments were conducted to determine the feasibility of the M. I. Temkin (4) method in determining the size of the specific surface of catalysts on the basis of one adsorption characteristic. The development of a new instrument for measuring surface dimensions of catalysts and its advantages over available instruments, are described. Results show that the calculation carried out in accordance with the Temkin method (equation 2) is perfectly satisfactory not only at standard low-temperature adsorption of nitrogen but also during the determination of equilibrium in conditions of benzene vapor adsorption in a gas carrier flow at ordinary pressures. The latter method opens greater possibilities

Card 1/2

62-1-4/21

Determination of the Size of the Specific Surface of Catalysts in
Dynamic Conditions According to One Adsorption Equilibrium

for mass and series determinations in connection with the simplicity of the apparatus employed. The method can also be useful in explaining the changes taking place in catalysts during thermal treatment, during long operation, during poisoning, regeneration etc. The greatest error in percentages was obtained for certain catalysts having small specific surface.

Tables, graphs, drawing. There are 6 references, of which 3 are Slavic.

ASSOCIATION:

Academy of Sciences of the USSR, Institute of Organic Chemistry
imeni N. D. Zelinskiy

PRESENTED BY:

SUBMITTED:

June 14, 1956

AVAILABLE:

Library of Congress

Card 2/2

RUBINSHTEYN, A.M.

SAMOYLOV, S.M.; RUBINSHTEYN, A.M.

Physical and chemical properties of WS_2 catalysts. Report No.1:
Effect of thermal treatment on the composition and adsorption
properties of WS_2 obtained by the decomposition of ammonium
sulfotungstate. Izv. AN SSSR Otd. khim. nauk no.10:1158-1165
O '57. (MIRA 11:3)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.
(Catalysts) (Ammonium thiotungstate) (Thermochemistry)

AUTHORS: Samoylov, S. M., Rubinshteyn, A. M. 62-58-5-4/27

TITLE: Investigation on the Physical and Chemical Properties of the WS_2 -Catalysts (Issledovaniye fizicheskikh i khimicheskikh svoystv WS_2 -katalizatorov) Communication 2: Adsorption-Properties of Mixed WS_2 -Clay Catalysts (Soobshcheniye 2. Adsorbtsionnyye svoystva smeshannykh katalizatorov WS_2 -glina)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 5, pp. 550 - 556 (USSR)

ABSTRACT: Regardless of the great importance of the mixed WS_2 -catalyst (WS_2 and alumina) the authors found not a single work dealing with the investigation of the adsorption-properties of these WS_2 -catalysts. It is assumed that these catalysts prepared according to the same method by WS_2 and various aluminae, must have a different pore-circumference, as well as different properties of catalyst. The properties of a simple (non-mixed)

Card 1/3

Investigation on the Physical and Chemical Properties 62-58-5-4/27
of the WS_2 -Catalysts. Communication 2: Adsorption-Properties of Mixed
 WS_2 -Clay Catalysts

WS_2 -catalyst were already described in the previous work (Reference 8). In the present article the authors describe the adsorption-properties of 2 different catalysts consisting of WS_2 and aluminae (Terran-and Tautiman-alumina). The adsorption-properties of the aluminae belonging to the mixed WS_2 -catalysts were investigated. The investigation of the porous structure and of the size of the specific surface of the mixed WS_2 -catalysts showed that this specific surface and the porous structure of the catalyst are determined by the specific surface of the alumina carrier. According to the given method of preparation the specific surface and the circumference of pores of the catalyst is smaller than the composition of aluminae in them. Tests carried out with respect to the adsorption of toluene from a solution in isooctane showed that the quantity of toluene-molecules in the adsorption-volume of the WS_2 -catalysts is smaller than the quantity

Card 2/3

Investigation on the Physical and Chemical Properties 62-58-5-4/27
of the WS_2 -Catalysts. Communication 2: Adsorption-Properties of Mixed
 WS_2 -Clay Catalysts

of nitrogen-molecules in the mono-molecular layer with the adsorption of nitrogen (at the temperature of liquid nitrogen). The data obtained from previous works (Reference 4) were compared to the adsorption-properties of the same type of catalyst (which are described in this work). It was found in this connection that a change of the catalytic activity with respect to the conversion of benzene or cyclohexan (at $420^{\circ}C$ and an initial pressure of H_2 of 140 atmospheres), as well as the change of the specific surface and of the pore-circumference, are correlative (simbatno). There are 8 figures, 1 table and 14 references, 11 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy AS USSR)

SUBMITTED: February 12, 1957

Card 3/5

1. Catalysts--Properties
2. Tungsten sulfide--Applications
3. Aluminum oxides--Applications

AUTHORS: Samoylov, S. M., Rubinshteyn, A. M. 62-56-5-5/27

TITLE: Investigation of the Physical and Chemical Properties of the WS_2 -Catalysts (Issledovaniye fizicheskikh i khimicheskikh svoystv WS_2 -katalizatorov) Communication 3: Phase-Composition and Adsorption-Properties of the Mixed Catalyst WS_2 - NiS - Al_2O_3 (Soobshcheniye 3. Fazovyy sostav i adsorbtsionnyye svoystva smeshannogo katalizatora WS_2 - NiS - Al_2O_3)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 5, pp. 557 - 564 (USSR)

ABSTRACT: In spite of the valuable properties of the mixed WS_2 -NiS- Al_2O_3 -catalyst, its structure has not been investigated with sufficient care up till now. There is only one work (Reference 9) on the electronmicroscopical investigation of its phase-composition. It was therefore of great interest to the authors of the present report, to obtain a detailed characteristic of this catalyst and of the kind of its catalytic activity. The experiment was carried out with 2 catalysts, viz. an investi-

Card 1/3

Investigation of the Physical and Chemical Properties 62-58-5-5/27
of the WS_2 -Catalysts. Communication 3: Phase-Composition and Adsorption-
-Properties of the Mixed Catalyst $WS_2 - NiS - Al_2O_3$

gation by means of X-ray-structural analysis of the adsorption of the nitrogen-vapors (at the boiling-point of the liquid nitrogen) and by the adsorption of toluene and benzene and their solutions in isooctane at room-temperature. The presence of the phases: WS_2 , $\gamma-Al_2O_3$, the lack of mixed phases and the possibility of the presence of the phase Ni_3S_2 were determined.

The specific surface and the adsorption-volume of the mixed $WS_2-NiS-Al_2O_3$ -catalyst were determined by way of the adsorption of the nitrogen-vapors and the adsorption of toluene and benzene from their solutions in isooctane. Moreover, the porous structure of the same after the adsorption of the nitrogen-vapors was more closely defined: The porosity is not homogeneous, on the contrary, it shows large differences which cover a range from less than 10 Å to more than 150 Å. It was proved by means of comparison of the volume-distribution of the pores (radius and specific surfaces) attainable for the nitrogen-

Card 2/3

Investigation of the Physical and Chemical Properties 62-58-5-5/27
of the WS_2 -Catalysts. Communication 3: Phase-Composition and Adsorption-
-Properties of the Mixed Catalyst WS_2 - NiS - Al_2O_3

-molecules, as well as of the molecules of benzene and toluene on the one hand and the catalytic activity of the two test-catalysts on the other, that the surface of the catalyst which is not accessible to the toluene-molecules, does not take part in the reaction of the phenol-hydration (at $380^\circ C$ and 110 to 120 atmospheres initial hydrogen pressure). There are 5 figures, 3 tables and 29 references, 17 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy AS USSR)

SUBMITTED: February 25, 1957

1. Catalysts--Properties
2. Tungsten sulfide--Applications
3. Nickel sulfide--Applications
4. Aluminum oxides--Applications

Card 3/3

AUTHORS: Rubinshteyn, A. M., Slinkin, A. A., SOV/62-58-7-3/26
Pribytkova, N. A.

TITLE: Properties and Structure of $\text{NiO-Al}_2\text{O}_3$ Catalysts (Svoystva i struktura $\text{NiO-Al}_2\text{O}_3$ -katalizatorov)²³ Communication 1: The Influence Exerted by the Structure and the Bindings of the Thermal Treatment on the Activity and Selectivity of the Effect (Soobshcheniye 1. Vliyaniye sostava i usloviy termicheskoy obrabotki na aktivnost' i izbiratel'nost' deystviya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958, Nr 7, pp 814 - 821 (USSR)

ABSTRACT: In the course of the last decade important investigations of the structure of the $\text{NiO} - \text{Al}_2\text{O}_3$ catalysts have been carried out and were published (Refs 1,2). No catalytic activity of these catalysts in any reaction has, however, been found. The authors of this paper dealt with the specific activity of the $\text{NiO-Al}_2\text{O}_3$ catalysts and in the reaction of the decomposition of $\text{i-C}_3\text{H}_7\text{OH}$ they determined the optimum activity (within the range of the content)(v oblasti sodержaniya) at 5-15 molar %

Card 1/2

Properties and Structure of $\text{NiO-Al}_2\text{O}_3$ Catalysts. SOV/62-58-7-3/26
 Communication 1: The Influence Exerted by the Structure and the Bindings
 of the Thermal Treatment on the Activity and Selectivity of the Effect

of NiO . They furthermore found that the effective selectivity of the catalysts investigated depends on their composition. Within the wide interval of the NiO concentrations only a dehydration takes place (in these concentrations) which tends to show the absence of free NiO . The authors demonstrated that in $\text{NiO-Al}_2\text{O}_3$ catalysts generally used the formation of $\text{Ni Al}_2\text{O}_4$ spinel is possible as early as at 400°C , viz. as a result of the intermolecular dehydration of the hydroxides. The changes of the specific surface area of the catalysts used were determined in detail. These changes take place within the temperature interval of from 400 to 900°C . There are 1 figure, 4 tables, and 11 references, 5 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N.D. Zelinskiy, AS USSR)

SUBMITTED: February 25, 1957
 Card 2/2.

SOV/62-58-8-3/22

AUTHORS: Rubinshteyn, A. M., Akimov, V. M., Kretalova, L. D.

TITLE: The Properties and the Structure of NiO-Al₂O₃-Catalysts
(Svoystva i struktura NiO-Al₂O₃-katalizatorov) Note 2:
The Radiographic Investigation of the Influence of the
Interaction of the Components and of the Conditions of
Thermal Treatment on the Phase Composition and Crystalline
Structure (Soobshcheniye 2. Rentgenograficheskoye izucheniye
vliyaniya sootnosheniya komponentov i usloviy termicheskoy
obrabotki na fazovyy sostav i kristallicheskuyu strukturu)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk,
1958, Nr 8, pp. 929-936 (USSR)

ABSTRACT: The investigation of the activity and effective selectivity
in the reaction of the decomposition of i-C₃H₇OH NiO-Al₂O₃-
catalysts described in the previous paper (Ref 1) furnished
the proof of the interaction of the components in solid
NiO-Al₂O₃-catalysts. Therefore it was assumed that they ex-
hibit a phase structure. This assumption needed, however,

Card 1/4

SOV/62-58-8-3/22

The Properties and the Structure of $\text{NiO-Al}_2\text{O}_3$ -Catalysts. Note 2: The Radiographic Investigation of the Influence of the Interaction of the Components and of the Conditions of Thermal Treatment on the Phase Composition and Crystalline Structure

checking and proving by means of physical methods of investigation. Especially the detailed radiographic investigation of the $\text{NiO-Al}_2\text{O}_3$ -catalysts could remove the deviation of the results (preliminary work of the authors and investigations carried out by Milligan and Merten (Ref 2), and Milligan and Richardson (Ref 3)). The first important result obtained from this work was that the authors found that among the catalysts investigated no amorphous ones were detected. Thus, the data supplied by Milligan and Merten could not be disproved in any way. They also found that the X-ray structural measurements showed the crystalline structure of the commonly precipitated catalysts $(\text{pH}8)\text{NiO-Al}_2\text{O}_3$ containing from 0 to 100 molar % of NiO (in contrast to those catalysts described by Milligan and Merten (Ref 2)). It was shown that the conditions of production exert a greater influence on the structure of the catalysts than the quantitative correlation of the components. It was also

Card 2/4

SOV/62-58-8-3/22

The Properties and the Structure of $\text{NiO-Al}_2\text{O}_3$ -Catalysts. Note 2: The Radiographic Investigation of the Influence of the Interaction of the Components and of the Conditions of Thermal Treatment on the Phase Composition and Crystalline Structure

found that catalysts of less than 50 molar % of NiO are monophase and do not have a free NiO . By measuring the parameter of the crystal lattice and of the occurring modifications in the concentration of NiO it was found that these monophase catalysts consist of a spinel solution of NiAl_2O_4 (in excess $\gamma\text{-Al}_2\text{O}_3$). The catalytic properties of $\text{NiO-Al}_2\text{O}_3$ were compared to the data of the phase and structural analyses. It turned out that there exist optimum parameters of the spinel lattice within the range of from 7.90 to 7.95 Å (for the dehydration). There are 1 figure, 3 tables, and 13 references, 9 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

Card 3/4

SOV/62-58-8-3/22

The Properties and the Structure of $\text{NiO-Al}_2\text{O}_3$ -Catalysts. Note 2: The Radio-
graphic Investigation of the Influence of the Interaction of the Components
and of the Conditions of Thermal Treatment on the Phase Composition and
Crystalline Structure

SUBMITTED: March 8, 1957

Card 4/4

AUTHORS: Rubinshteyn, A. M., Slinkin, A. A. SOV/62-56-9-6/26

TITLE: Properties and Structure of the $\text{NiO-Al}_2\text{O}_3$ Catalysts (Svoystva i struktura $\text{NiO-Al}_2\text{O}_3$ -katalizatorov) Communication 3: Investigation of the Relation Between Structure, Magnetic Properties, and Activity (Soobshcheniye 3. Issledovaniye sootnosheniy mezhdu sostavom, magnitnymi svoystvami i aktivnost'yu)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1958, Nr 9, pp 1054 - 1060 (USSR)

ABSTRACT: Previous papers (Refs 1,2) described the $\text{NiO-Al}_2\text{O}_3$ catalysts and gave results of X-ray studies and of determinations of their activity and reaction selectivity in the decomposition of isopropyl alcohol. This paper presents the results of investigations on the magnetic properties of these catalysts. In the investigation of these properties of $\text{NiO-Al}_2\text{O}_3$ catalysts precipitated together (with a content of 59 mole-% NiO) the magnetic susceptibility, the magnetic moment, and the Veys constant Δ were determined using thermal treatment. It was found that pre-

Card 1/3

Properties and Structure of the $\text{NiO-Al}_2\text{O}_3$ Catalysts. SOV/62-58-9-6/26
 Communication 3: Investigation of the Relation Between Structure,
 Magnetic Properties, and Activity

precipitated catalysts, as opposed to the behavior of
 applied catalysts, obey the Curie (Kyuri) law over
 the entire concentration range investigated, and give
 positive Δ values. The valence induction (according to
 Ref 10), which arises from the trivalent, positively-
 charged Ni, occurs at NiO concentrations up to 30 mole-%.
 The changes in the magnetic moment μ and in the Veys
 constant Δ confirm the formation of spinel NiAl_2O_4

in the catalysts and in a solid solution of spinel in
 Al_2O_3 . A satisfactory correlation between the magnetic
 data and the results of the activity measurement and X-ray
 structure determination (Refs 1,2) was obtained. There
 are 3 figures, 1 table, and 11 reference, 4 of which are
 Soviet.

ASSOCIATION: Institut organicheskoy khimii im.N.D.Zelinskogo Akademii
 nauk SSSR (Institute of Organic Chemistry imeni N.D.Zelinskiy,
 AS USSR)

Card 2/3

AUTHORS: Afanas'yev, V. A., Rubinshteyn, A. M. SOV/32-24-7-21/65

TITLE: The Determination of the Surface of Catalysts According to the Adsorption Isothermal Lines (Opredeleniye poverkhnosti katalizatorov po izotermam adsorbtsii, snyatym v protochnoy sisteme)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 7, pp. 830 - 832 (USSR)

ABSTRACT: In order to avoid the complicated vacuum apparatus, the range of application of this system, the accuracy of determination and the means of producing samples is investigated. From the scheme of the apparatus and from its description proceeds that nitrogen was used as carrier gas, benzene and carbon tetrachloride were used as adsorbate and MgO-catalysts were used as catalysts (in pure state or with admixtures of metal oxides and of magnesium salts, respectively). Data by Katzow (Ref 3), and Brunauer and Emmett (Ref 1) were used in the computations. The method is based upon a computation of the relative vapor pressure from a given equation by means of the results of the measurements. The adsorption isothermal line is drawn by plotting the adsorption, taken in millimoles or moles of ad-

Card 1/2

The Determination of the Surface of Catalysts According to the Adsorption Isothermal Lines SOV/32-24-7-21/65

sorbed vapors per gram of weighed sample, versus the relative vapor pressure. The results were checked by other methods and were graphically compared. It may be seen that the deviations do not exceed $\pm 10\%$ as the surface varies within the interval of from 20 to $25 \text{ m}^2/\text{g}$ and above. The time necessary for the determination of the surface can be considerably reduced, if the equation Brunauer-Emmett-Teller (Ref 2) is applied. There are 2 figures and 4 references, 1 of which is Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

Card 2/2

AUTHORS:

RUBINSHTEYN, A. M.
Samoylov, S. M., Slinkin, A. A., Rubinshteyn, A. M. 20-3-31/59

TITLE:

The Investigation of the Phase Composition and of the Adsorption Properties of an Iron-Carbon Catalyst
(Issledovaniye fazovogo sostava i adsorbtsionnykh svoystv zhelezo-ugol'nogo katalizatora)

PERIODICAL:

Doklady AN SSSR, 1958, Vol. 118, Nr 3, pp. 526-529 (USSR)

ABSTRACT:

This work contains data on two specimens of an iron-carbon catalyst, which had not been put into operation. The specimen No. 1 was produced with 5,6 % Fe on activated carbon and specimen No. 2 of 10,5 % Fe on generator dust. Their activity was estimated from the hydration of 20 g phenol in the presence of 2,5 g of catalyst at 480°C and at an initial pressure of the H₂ of 114 atmospheres (duration of reaction 3 hours). Besides, after the adsorption of H₂ on the sample it was examined by structural X-ray and by magnetic methods. The results of these experiments are illustrated in 3 diagrams and in 1 table. The diffraction images of the examined samples almost did not differ from each other. The distances between the planes resembled the corresponding

Card 1/3

The Investigation of the Phase Composition and of the
Adsorption Properties of an Iron-Carbon Catalyst

20-3-31/59

distances in the following individual compounds: Na_2SO_4 , $\alpha\text{-Fe}_2\text{O}_3$, $\gamma\text{-Fe}_2\text{O}_3$, Fe_3O_4 , $\beta\text{-Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$. It could not be ascertained, however, which iron oxides were really contained in the examined samples. By the structural X-ray method apart from ferric oxides also the presence of crystalline Na_2SO_4 was found. This conclusion agrees well with the results of the measurement of the magnetic susceptibility. The results of the here performed investigations of the phase composition and of the magnetic properties speak against the assumption that the iron in the unused iron-carbon catalyst occurs only as a compound ($\text{Fe}(\text{OH})_3$ or $\text{Fe}(\text{OH})_2$). The unused catalyst contains a mixture of paramagnetic and ferromagnetic ferric oxides and perhaps also of $\beta\text{-Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$. The isothermal curves of the adsorption from a solution of iso-octane and the percentage of toluene in the adsorption volume of the catalysts were measured at room temperature. The comparison of the adsorption properties of the catalysts with the results of the hydration of phenol shows that the sample 1 was more active with regard to the rate of modification. The different activity of the samples 1 and 2 does not depend on the different iron percentage in

Card 2/3

*The Investigation of the Phase Composition and of the
Adsorption Properties of an Iron-Carbon Catalyst

20-3-31/59

them. The selectivity of the effect of the specimens 1 and 2 was equal, as can be seen from the comparison with H_2 . The active surface of the catalyst 1 with regard to the reversible chemisorption was $16 \text{ m}^2/\text{g}$, which is about 3 % of the specific surface, which was ascertained from the low-temperature adsorption of N_2 vapors. There are 3 figures, 1 table, and 19 references, 16 of which are Slavic.

ASSOCIATION: Institute for Organic Chemistry imeni N. D. Zelinskiy AN
USSR (Institut organicheskoy khimii im. N. D. Zelinskogo
Akademii nauk SSSR)

PRESENTED: July 22, 1957, by B. A. Kazanskiy, Academician

SUBMITTED: July 12, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHORS: Rubinshteyn, A. M., Yakerson, V. I. SOV/20-121-4-25/54

TITLE: Some Data on the Kinetics of Thermal Decomposition of Alkali Earth Acetates (Nekotoryye dannyye po kinetike termicheskogo razlozheniya atsetatov shchelochnozemel'nykh metallov)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 121, Nr. 4, pp. 664 - 667 (USSR)

ABSTRACT: The investigation of the problem mentioned in the title may be of interest because it may be applied to the production of ketones, especially of asymmetric ketones. Examples taken from publications are mentioned (Refs 1 - 7). The authors want to determine the initial temperatures, as well as the velocity constants and the activation energies in order to be able to compare them with the corresponding quantities for the catalytic ketonization. The velocity of a chemical reaction cannot be predicted. In the case of reactions of the same type with one and the same activated complex there is a certain relation between kinetic and thermodynamical characteristics of the reactions (Refs 9 - 10). The process of change of free energy with temperature is shown on figure 1. It can be seen that the yields of equilibrium corresponding

Card 1/4

Some Data on the Kinetics of Thermal Decomposition of Alkali Earth Acetates SOV/2o-121-4-25/54

with this process change at $350 - 480^{\circ}$ as follows:
 $BaAc_2 > SrAc_2 > CaAc_2$ and at $480 - 550^{\circ}$: $CaAc_2 > SrAc_2 > BaAc_2$.
 Below 350° ΔF becomes positive (Rossini's handbook was used); the constant of equilibrium is very small and reaches in the case of Ca-, Sr- and Ba-acetates its lowest temperature of decomposition. Analogous computations for Mg-acetate showed that the reaction does not proceed according to the mentioned scheme. It is true that in this case decomposition proceeds accompanied by the formation of oxide as the X-ray structure analysis shows. The decomposition of acetate was thermogravimetrically investigated. The devices used for this purpose are described. The thermogravimetric curves (Fig 2) reveal that the decomposition of $MgAc_2$ sets in at 300° , of $CaAc_2$ at about 370° and of $SrAc_2$ at about 400° ; that means at somewhat lower temperatures than according to Krönig (Krenig, Ref 13). The acetates which were dehydrated at the beginning showed the same results. The complications which arose in the course of the experiments are described. Figure 3a shows the kinetic curves of the $CaAc_2$ decomposition between 385 and

Card 2/4

Some Data on the Kinetics of Thermal Decomposition of Alkali Earth Acetates SOV/20-121-4-25/54

435°. From the mentioned curves it may be seen that the monomolecular reaction of decomposition does not correspond with classical theory. Only in the middle part the curves are governed by the equation of I.order. The velocity of decomposition depends to a high degree on the material of the walls of the vessels. There are 3 figures and 16 references, 10 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N.D.Zelinskiy, AS USSR)

PRESENTED: April 14, 1958, by B.A.Kazanskiy, Member, Academy of Sciences, USSR

SUBMITTED: April 4, 1958

Card 3/4

5 (2,3,4)

AUTHORS:

Minachev, Kh. M., Ryashentseva, M. A., SOV/62-59-5-9/40
Rubinshteyn, A. M.

TITLE:

Investigation of the Properties of Metal Oxide Catalysts for Benzine Reforming (Issledovaniye svoystv okisno-metallicheskih katalizatorov reforminga benzinov). Communication 5. Some Peculiarities of the Catalytic and Physical Properties of Palladium Catalysts (Soobshcheniye 5. Nekotoryye osobennosti kataliticheskikh i fizicheskikh svoystv palladiyevykh katalizatorov)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 5, pp 819-825 (USSR)

ABSTRACT:

Platinum catalysts were used in the processing of various types of petroleum; later on, palladium catalysts were used because they are cheaper and more active; however, they were not too stable. In a previous paper (Refs 1,2) the authors had discussed catalysts which contained organic sulphur compounds or had been treated with hydrogen sulfide and which showed various degrees of stability and activity. The literature contains sufficient experimental data on sulphurous metal catalysts (Refs 3,4,5,6) but there is no explanation of the mechanism of the protective property of hydrogen sulfide for metal catalysts of

Card 1/3

Investigation of the Properties of Metal Oxide Catalysts for Benzine Reforming. Communication 5.
Some Peculiarities of the Catalytic and Physical Properties of Palladium Catalysts

SOV/62-59-5-9/40

group 8 of the periodical system. In this work the authors attempt to explain the circumstances mentioned in connection with the catalysts for benzine reforming investigated in the works (Refs 1,2). In connection with it investigations are carried out of the X-ray structure, the specific surface, the sulphur and coke content on the catalysts used up, and the kinetics of the dehydrogenation of cyclohexane on new as well as used up catalysts of the three catalysts: 0.5% Pd-Al₂O₃ (Nr 1), 0.5% Pd-Al₂O₃ treated with HF (Nr 2), and 0.5% Pd-Al₂O₃ treated with HF and H₂S (Nr 3). All data obtained experimentally are summarized in tables 1-5 and the figure. The investigations showed: the specific surfaces of the catalysts (Nr 1) and (Nr 2) are equal, the specific surface of (Nr 3) amounts to 2/3 the size of either (Nr 1) or (Nr 2). (Nr 2) only showed considerable sintering. The phase analysis showed that the catalysts contained crystalline γ -Al₂O₃ and Pd only and that with (Nr 3) a sulphur com-

Card 2/3

Investigation of the Properties of Metal Oxide Catalysts for Benzine Reforming. Communication 5.
Some Peculiarities of the Catalytic and Physical Properties of Palladium Catalysts

SOV/62-59-5-9/40

pound of palladium appears on the surface only. With dehydrogenation of cyclohexane at normal temperatures the size arrangement of the specific activity decreases from (Nr 1) to (Nr 3). The temperature coefficient of the reaction rate on the catalyst (Nr 3), however, is considerably greater than that of (Nr 2) and (Nr 3). Since benzine reforming proceeds at temperatures of 300 - 480°, the catalyst (Nr 3) proved the most active in benzine reforming. The increase of activity and stability (73 hours as compared to 46 and 27 hours until using up) is caused by the presence of PdS at the surface of the catalyst (Nr 3). There are 1 figure, 5 tables, and 7 references, 6 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: July 24, 1957
Card 3/3

SOV/78-4-7-7/44

5(2)

AUTHORS:

Rubinshteyn, A. M., Dulov, A. A.

TITLE:

The Production of Corundum at Low Temperatures and Its Catalytic Activity (Prigotovleniye korunda pri nizkikh temperaturakh i yego kataliticheskaya aktivnost')

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 7, pp 1498-1500 (USSR)

ABSTRACT:

Corundum was produced from bayerite - $Al(OH)_3$ -, which was precipitated at 60-95° with ammonia and ammonium nitrate and was ground fine with small additions of natural diaspore. Hydrothermal treatment (at 325-400°) was carried out in a rotating autoclave. During the reaction samples were taken for the X-ray determination of the phases. The results given by table 1 show that within the temperature interval mentioned no diaspore is formed, but that bayerite is converted immediately into corundum. For comparison, corundum was produced by means of an eight hours' high-temperature treatment of bayerite. Catalytic activity was determined by means of the decomposition of absolute isopropyl alcohol, and the specific surface by measuring the adsorption of benzene vapor at 20°. Results are given by table 2.

Card 1/2

SOV/78-4-7-7/44

The Production of Corundum at Low Temperatures and Its Catalytic Activity

They show that hydrothermal production causes no changes in the macrostructure of the corundum. The corundum produced in this manner had a higher bulk weight, but it was less active than the samples produced at higher temperatures. This is explained by its water content (0.84%), which is ten times greater than would be necessary for the production of a monolayer. Corundum has an activity that is less by two orders of magnitude than that of other Al_2O_3 -phases. Individual samples partly had a dehydrogenizing and partly dehydrating effect. Some of the samples also introduced cracking reactions. The authors intend to continue the series of experiments with synthetic diaspora. There are 2 tables and 6 references, 3 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: April 14, 1958

Card 2/2

5 (4)

AUTHORS:

Rubinshteyn, A. M., Minachev, Kh. M.
~~Akimov, V. M.~~

SOV/79-29-8-10/81

TITLE:

The Dependence of the Distribution of Platinum in the Impregnated Pt-C Catalyst on the Concentration of the Initial Solution H_2PtCl_6 and on the Nature of Carbon Granulation

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 8, pp 2503 - 2508 (USSR)

ABSTRACT:

The authors previously made a radiographic investigation of the penetration of platinum into the catalyst grain of the platinized carbon having different grain size (Ref 1); however, the determinations were not carried out accurately. Besides, the fibrous structure of the carbon obstructed exact density measurements on the photographs. The photorecording method was therefore abandoned, and the ionization method, according to the X-ray apparatus URS-50-I, was used under strict conditions of comparison. These experiments were further intended to explain whether the depth of platinum penetration into the carbon depends on the concentration of the initial solutions. The distribution of the platinum in the carbon grain was determined in the impregnated Pt-C catalysts according to the absorption

Card 1/2

The Dependence of the Distribution of Platinum in the SOV/79-29-8-10/81
Impregnated Pt-C Catalyst on the Concentration of the
Initial Solution H_2PtCl_6 and on the Nature of Carbon Granulation

of X-rays which had been measured by the above ionization method. These catalysts contained 20.4 and 2% platinum, and the grain sizes of the carbon amounted to 2-10 mm. It was confirmed that the concentration of platinum decreased from the surface inward, and it was ascertained that with the decrease of the concentration of platinum in the initial solution, the concentration gradient of the platinum also decreases as the latter penetrates into the grain (i.e. that the diluted solutions yield catalysts with better distribution of the metal). The catalytic activity in the various dehydrogenations of cyclohexane and in the hydrogenation of benzene was also determined. The corresponding results are tabulated. There are 4 figures, 1 table, and 3 Soviet references.

ASSOCIATION: Institut organicheskoy khimii Akademii nauk SSSR (Institute of Organic Chemistry of the Academy of Sciences, USSR)

SUBMITTED: July 14, 1958
Card 2/2

RUBINSHTEYN, A.M.; EL'TEKOV, Yu.A.; SLOVETSKAYA, K.I.

Porous structure and specific surface area of $\text{NiO-Al}_2\text{O}_3$ catalysts and changes following variation in composition and in conditions of thermal processing [with summary in English]. Zhur.fiz.khim. 33 no.2:310-317 F '59. (MIRA 12:4)

1. AN SSSR, Institut organicheskoy khimii, Moskva.
(Catalysts)

AUTHORS: Rubinshteyn, A. M., El'tekov, Yu. A., SOV/20-122-1-23/44
Slovetskaya, K. I.

TITLE: Chemisorption of Isopropyl Alcohol on Ferroaluminium
Gel Catalysts (Khemosorbtsiya izopropilovogo spirta
na katalizatorakh - ferroalyumogelyakh)

PERIODICAL: Doklady Akademii nauk SSSR, Vol 122, Nr 1,
pp 86 - 89 (USSR) 1979

ABSTRACT: The reaction of decomposition of isopropyl alcohol
is often used as a standard of activity and selectivity
of oxide catalysts. It may take 2 directions: a)
Dehydration by means of Al_2O_3 , e.g., b) dehydration (by
means of metals, oxides, Fe_2O_3 among them). In
the laboratory of the authors a detailed investigation
was carried out with the catalysts mentioned in the
title. The adsorption of isopropyl alcohol on $\text{Fe}_2\text{O}_3 \cdot \text{Al}_2\text{O}_3$
where both mentioned reactions take place, was in-
vestigated in the present paper. Table 1 shows the loss
of weight caused by removal of the structural water.
Figure 1 shows that the chemisorption of isopropyl

Card 1/4

Chemosorption of Isopropyl Alcohol on Ferroaluminium
Gel Catalysts

SOV/20-122-1-23/44

alcohol takes place at 30° on the surface of all samples investigated. The composition of the catalyst exercises little influence upon chemosorption. It depends, however, much more on the extension of the specific surface of the catalysts. This points out to the fact that in the surface layer of the catalyst either one or both components are present which sorb isopropyl alcohol to the same extent. The assumption that both components are present in the above mentioned layer is confirmed by the results of phase analysis. The latter showed that the components are mutually dissolved and form two solid solution phases. Figure 1 shows furthermore that the increase of annealing temperature of each catalyst leads to both a reduced total absorption of isopropyl alcohol and the reduction of the chemisorbed quantity. The problem on which surface groups chemosorption takes place has to be discussed: From references 1,2,5,6 it may be concluded that at room temperature a chemical adsorption of isopropyl alcohol takes place under the formation of surface

Card 2/4

Chemosorption of Isopropyl Alcohol on Ferroaluminum
Gel Catalysts

SOV/20-122-1-23/44

alcoholates. Table 1 shows that the water content in the catalyst decreases with increasing temperature and Fe_2O_3 content. The water is removed quicker than the specific surface (Tables 1 and 2). This points to the fact that the concentration of OH-groups decreases per surface unit of the catalyst in connection with those modifications. From table 2 which shows the values of the chemosorption share (a_x) and the concentration values of OH-groups it may be seen that the chemisorbed quantity of isopropanol remains practically unchanged and amounts to $4\mu\text{ mol/m}^2$ approximately. It is quite likely that on the surface of the catalyst there are enough OH-groups for chemosorption. There are 1 figure, 2 tables, and 7 references, 7 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N.D.Zelinskogo Akademii
nauk SSSR (Institute of Organic Chemistry imeni N.D.
Zelinskiy, AS USSR)
Card 3/4

RUBINSHTEYN, A.M.; AFANAS'YEV, V.A.; AKIMOV, V.M.; PRIBYTKOVA, N.A.;
SLOVERSKAYA, K.I.

Effect of composition and heat treatment conditions on the
structure and catalytic activity of Al_2O_3 - ZrO_2 catalysts.
Dokl. AN SSSR 124 no.5:1076-1079 P '59. (MIRA 12:3)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo AN
S.S.S.R. Predstavleno akademikom A.A. Balandinym.
(Catalysts) (Alumina) (Zirconium oxides)

reports to be presented at the 2nd Intl Congress on Catalysis, Paris, France, 4-9-Jul '60.

ZELINSKIY, Nikolay Dmitriyevich, akademik [1861-1953]; KAVERZNEVA,
Ye.D., doktor khim.nauk, otv.red.; PLATE, A.F., doktor khim.nauk,
red.; RUBINSHTEYN, A.M., doktor khim.nauk, red.; MYDUS, Ya.T.,
doktor khim.nauk, red.; BRUSOV, I.I., red.isd-va; TIKHOMIROVA,
S.G., tekhn.red.

[Collected works] Sobranie trudov. Moskva, Izd-vo Akad.nauk
SSSR. Vol.4. 1960. 598 p. [____ Author and subject index]
____ Imennoi i predmetnyi ukazateli. 26 p. (MIRA 14:2)
(Zelinskii, Nikolai Dmitriyevich, 1861-1953)
(Chemistry, Organic)

RUBINSHTEYN, A.M., PRIBYTKOVA, N.A., AFANAS'YEV, V.A., SLINKIN, A.A.

Structure and texture of alumina - chromic oxide - potassium
monoxide catalysts, and their activity and selectivity of
action in the decomposition of $i\text{-C}_3\text{H}_7\text{OH}$. Kin. i kat. 1 no.1:129-
143 My-Je '60. (MIRA 13:8)

1. Institut organicheskoy khimii im. N.D. Zelinskogo Akademii
nauk SSSR.

(Alumina) (Chromium oxide) (Potassium oxide)
(Butanol)

S/195/60/001/003/011/013
B013/B058

AUTHORS: Rubinshteyn, A. M., Slovetskaya, K. I., Bruyeva, T. R.

TITLE: Study of the Adsorption Properties of Aluminum-chromium-potassium Catalysts for the Dehydrogenation of Paraffins

PERIODICAL: Kinetika i kataliz, 1960, Vol. 1, No. 3, pp. 455 - 463

TEXT: In this paper the authors studied the adsorption properties of an active aluminum-chromium-potassium catalyst (13% Cr_2O_3 , 84.6% Al_2O_3 , and 2.4% K_2O) with regard to water vapor, isopropyl alcohol and isopentane.

Two samples of equal composition, but from different production batches were used. They were of somewhat different texture, but of almost equal activity. Sample 1 was used for studying the adsorption of isopentane, sample 2 for that of water and isopropanol. The isopentane adsorption on sample 1 was studied by the capillary method described in Ref. 22. The adsorption isotherms measured at 20°, 50°, 100°, 150°, 205°, 241°, 297°, and 325°C were well reproducible. It was established that only a

Card 1/4

Study of the Adsorption Properties of
Aluminum-chromium-potassium Catalysts
for the Dehydrogenation of Paraffins

S/195/60/001/003/011/013
B013/B058

physical, completely reversible isopentane adsorption takes place below 150°C, the amount of chemisorbed isopentane increasing exponentially with the temperature. At 350°C and permanent contact with the catalyst, cracking of the isopentane occurs at 10 to 15 mm Hg. This is accompanied by consecutive reactions. The rate of chemisorption which has an activation energy of ~15 kcal/mole increases quickly with increasing temperature. The following was studied next: a) adsorption of H₂O on a reduced sample at room temperature; b) removal of H₂O by heating a reduced and initial sample 2; c) adsorption of H₂O on the initial and the reduced sample 2 at 400°C. It was ascertained that at room temperature about 50% of the catalyst surface are covered with adsorbed water which can only be removed by heating up to 300 to 450°C. The adsorption is reversible at 440°C and is about 0.13 mmol/g catalyst or 0.8 μmol/m² on the reduced sample. The adsorption of isopropyl alcohol was studied gravi-

Card 2/4

Study of the Adsorption Properties of
Aluminum-chromium-potassium Catalysts
for the Dehydrogenation of Paraffins

S/195/60/001/003/011/013
B013/B058

metrically at 300°C on sample 2 (reduced and initial) on a catalyst of equal composition produced by means of coprecipitation and on one without K_2O . The primary adsorption on a reduced catalyst differs from that on an oxidized one by its reproducibility. The adsorption isotherms are very similar to each other in the case of coprecipitated catalysts with and without K_2O . It was established that the chemisorption of isopropyl alcohol on aluminum-chromium- and aluminum-chromium-potassium catalysts occurs to a great extent and at a high rate already at 300°C and small relative pressures. Alcohols, among them also methanol, are therefore unsuitable for determining the specific surface of aluminum-chromium catalysts. The authors thank O. D. Sterligov and A. P. Belen'kaya for supplying catalyst samples and for tests. A. L. Klyachko-Gurvich participated in determining the texture of catalysts. The analyses of decomposition products were made by Yu. A. Fedyunin with the mass spectrometer of the type MVI-1035 (MI-1035). There are 10 figures, 2 tables, ✓

Card 3/4

Study of the Adsorption Properties of
Aluminum-chromium-potassium Catalysts
for the Dehydrogenation of Paraffins

S/195/60/001/003/011/013
B013/B058

and 24 references: 8 Soviet, 9 US, 1 German, 5 British, and 1 French.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy
AS USSR)

SUBMITTED: May 13, 1960

Card 4/4

RUBINSHTEYN, A.M.; YAKERSON, V.I.

Vapor phase catalytic ketonization of acetic acid over alkaline
earth carbonates. Zhur. ob. khim. 30 no.9:2789-2797 S '60.
(MIRA 13:9)

1. Institut organicheskoy khimii Akademii nauk SSSR.
(Acetic acid) (Ketone) (Alkaline earth carbonates)

S/O20/60/134/004/034/036XX
B016/B067

AUTHORS: Rubinshteyn, A. M., Slovetskaya, K. I., and Bruyeva, T. R.

TITLE: Chemosorption of Isopentane on an Aluminum - Chromium -
Potassium - Catalyst

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 4,
pp. 836-839

TEXT: The authors describe the chemosorption of isopentane on an aluminum - chromium catalyst, the standard catalyst for paraffin dehydrogenation, which they measured for the first time. They studied the chemosorption of the paraffins and olefins at dehydrogenation temperatures which are close to those of the paraffins. The adsorption of isopentane was studied by the capillary method (Ref. 15). The chemosorption of isopentane rapidly increases with an increase in temperature. Consequently it is assumed to be rather high at the dehydrogenation temperature of the paraffins (500°C and above). The authors conclude from the rapid increase in the number of chemosorption centers (estimated from the rapidly increasing amount of the isopentane chemisorbed with rising temperature,

Card 1/2

Chemosorption of Isopentane on an Aluminum -
Chromium - Potassium - Catalyst

S/020/60/134/004/034/036XX
B016/B067

that at 500-550°C a considerable part of the catalyst surface is bound to take part in chemosorption. The calculation based on a diagram extrapolated for 550°C shows that at 550°C about 18.8% of the surface (calculated on the basis of a monolayer at 20°C) take part in the chemosorption of isopentane. Assuming that the activated and adsorbed isopentane is subject to the reaction the authors conclude that about 0.2 of the total catalyst surface take part in the dehydrogenation at 550°C. At present, the chemosorption of isopentene on the same catalyst, is being studied. A. L. Klyachko-Gurvich took part in the examination of the catalyst. Yu. A. Fedyunin who made some analyses, and G. D. Lyubarskiy are also mentioned. There are 3 figures, and 16 references: 10 Soviet, 1 US, and 4 British.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

PRESENTED: May 13, 1960, by B. A. Kazanskiy, Academician

SUBMITTED: May 12, 1960

Card 2/2

YAKOVSON, V.I.; RUBINSHTEYN, A.M.

Catalytic oxidation of carboxylic acids and the thermal decomposition of their salts. Reakts.i.metall.sov. soed. 13: 127-266 '64.

(MIRA 17:10)

YAKERSON, V.I.; LAFER, L.I.; KLYACHKO-GURVICH, A.I.; RUBINSHTEYN, A.M.

Catalytic ketonization of acetic acid over mixed catalysts
 $ZrO_2 - Al_2O_3$. Izv. AN SSSR. Ser.khim. no.1:83-89 '66.
(MIRA 19:1)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
Submitted August 23, 1963.

L 45725-66 EWT(m)/EWP(i)/T RM
ACC NR: AP6024413 (N)

SOURCE CODE: UR/0020/66/169/001/0111/0113

AUTHOR: Dulov, A. A.; Slinkin, A. A.; Rubinshteyn, A. M.; Kotlyarevskiy, I. L.; Shvartsberg, M. S.; Andriyevskiy, V. N.; Zanina, A. S.; Shergina, S. I. 56

ORG: Institute of Organic Chemistry im. N. D. Zelinskiy, Academy of Sciences, SSSR (Institut organicheskoy khimii Akademii nauk SSSR); Institute of Chemical Kinetics and Combustion, Siberian Branch, Academy of Sciences, SSSR (Institut khimicheskoy kinetiki i goreniya Sibirskogo otdeleniya Akademii nauk SSSR)

TITLE: Influence of disturbance of conjugation on the properties of semiconducting polymers 6

SOURCE: AN SSSR. Doklady, v. 169, no. 1, 1966, 111-113

TOPIC TAGS: semiconducting polymer, conjugated polymer, semiconductor conductivity

ABSTRACT: It has been frequently reported in the literature that the disturbance of conjugation in organic semiconductors as a result of either noncoplanarity of aromatic rings or introduction of aliphatic, oxygen, or sulfur bridges into the conjugated chain lowers the electric characteristics. In the present paper, the intensity of the influence of these different types of conjugation disturbances was compared in a series of polymers of a single class, the polyarylenepolyacetylenes, whose electrical conductivity σ and ESR spectra were measured. The introduction of various groups disturbing the conjugation into the conjugated chain was found to hinder the processes of

Card 1/2

UDC: 541.67

L 45725-66

ACC NR: AP6024413

current transfer. The relative effectiveness of this hindering influence of different groups may change with the flexibility of the molecules, which affects the intermolecular interactions. In particular, the biphenylene grouping, which sharply decreases the electric properties of "linear" structures, does not affect the properties of polymers consisting of more flexible oxygen-containing molecules. It is notable that bridge groups do not appreciably lower the semiconducting properties. The paper was presented by Academician Kazanskiy, B. A., 23Oct65. Orig. art. has: 1 table.

SUB CODE: 07/ SUBM DATE: 23Jul65/ ORIG REF: 014/ OTH REF: 003

Card 2/2 ULR

KAGAN, L.Kh.; KLYACHKO-GURVICH, A.L.; RAPOPORT, I.B.; RUBINSHTEYN, A.M.

Effect of the conditions of the reduction of iron-copper catalysts on their physicochemical properties. Khim. i tekhn. topl. i masel 10 no.3:14-16 Mr '65. (MIRA 18:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefi i gazov i polucheniyu iskusstvennogo zhidkogo topliva.

SLINKIN, A.A.; DULOV, A.A.; RUBINSHTEYN, A.M.

Magnetic and electric properties of chelate polymers. Izv.
AN SSSR. Ser. khim. no.10:1769-1775 O '64. (MIRA 17:12)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

RUBINSHTEYN, A.M.; PRIBYTKOVA, N.A.; AKIMOV, V.M.; KLYACHKO-GURVICH, A.L.;
SLINKIN, A.A.; MEL'NIKOVA, I.V.

Complex investigation of iron catalysts for ammonia synthesis. Part 2:
Structure and texture of doubly promoted precipitated catalysts. Kin.
1 kat. 6 no.2:285-293 Mr-Apr '65. (MIRA 18:7)

1. Institut organicheskoy khimii imeni Zelinskogo AN SSSR.

RUBINSHTEYN, A.M.; SLOVETSKAYA, K.I.; BRUYEVA, T.R.

Benzene and n-hexane adsorption on aluminum oxide. Izv. AN SSSR.
Ser. khim. no.5:900-902 '65. (MIRA 18:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.

SLOVETSKAYA, K.I.; BRUYEVA, T.R.; RUBINSHTEYN, A.M.

Adsorption of methanol on aluminum-chromium-potassium catalysts.
Izv. AN SSSR. Ser. khim. no.5:903-904 '65. (MIRA 18:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.

L 521 9-65 EFF(c)/EWP(j)/EWT(m) Pc-4/Pr-4 RM
ACCESSION NP: AP5011683

UR/0195/65/006/002/0285/0293

AUTHOR: Rubinshteyn, A. M.; Pribytkova, N. A.; Akimov, V. M.; Klyachko-Gurvich,
A. L.; Slinkin, A. A.; Mel'nikova, I. V.

TITLE: A comprehensive study of ferric catalysts for ammonia synthesis
II. Structure and grain of twice activated precipitated catalysts

SOURCE: Khimiya i kataliz, v. 6, no. 2, 1965, 285-293

TOPIC TAGS: ammonia, potassium compound, alumina, catalyst

ABSTRACT: The authors studied the effect of potassium oxide on the following properties of iron-alumina catalysts synthesized from coprecipitated hydroxides: specific surface, specific volumes and mean radii of pores (note: these three para-

Fe₂O₃/Al₂O₃ ratios (see table 1 of the enclosure). The samples were prepared

Card 1/3

L 52349-65

ACCESSION NR: AP5011683

series: the first was the "control" series activated only by Al₂O₃; the other 3 series were activated by K₂O at various stages of synthesis. It was found that the later the stage at which the potassium oxide activation takes place, the less the grain of the catalyst is changed. X ray analysis indicated that the addition of an alkali has a strong stabilizing effect on the lattice of the maghemite phase, especially if the alkali is introduced at the hydroxide stage. This stabilizing effect on spinel structures depends on the state of the initial iron compounds. "Research conducted jointly with GIAP Laboratory Nr 3." Orig. art. has: 4 tables.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR
(Institute of Organic Chemistry)

ENCL: 01

SUB CODE: 30

OTHER: 014

L 52349-65

ACCESSION NR: AP5011683

ENCLOSURE: 01

0

Table 1

Sample No	1	2	3	4	5	6	7	8
Fe ₂ O ₃ Wt. %	62.5	86.6	92.1	94.6	94.7	97.6	98.85	99.35
Al ₂ O ₃ Wt. %	37.5	13.4	7.9	5.4	5.3	2.4	1.15	0.65

Card 3/3 *myB*

LACHINOV, S.S.; RUBINSHTEYN, A.M.; AKIMOV, V.M.; KLYACHKO-GURVICH, A.L.;
KONYUKHOVA, I.N.; KUZNETSOV, L.D.; LEVITSKAYA, T.T.; PRIBYTKOVA, N.A.;
SLINKIN, A.A.; CHESNOKOVA, R.V.

Complex investigation of iron catalysts for ammonia synthesis.

Kin. i kat. 5 no.3:478-489 My-Je '64.

(MIRA 17:11)

1. Institut organicheskoy khimii AN SSSR i Gosudarstvennyy institut
azotnoy promyshlennosti.

YAKENSON, V.I.; LAFER, L.I.; ROBINSHTEYN, A.M.

Thermogravimetric study of the kinetics and mechanism of decomposition of a mixture of Ca and Li acetates. *Kin.i kat.* 5 no.6: 1014-1019 N-D '64. (MIRA 18:3)

1. Institut organicheskoy khimii imeni Zelinskogo AN SSSR.

YAKERSON, V.I.; LAFER, L.I.; GORSKAYA, L.A.; RUBINSHTEYN, A.M.

Chromatographic study of physical and chemical adsorption of hydrocarbons on an aluminum-chromium-potassium catalyst. Izv. AN SSSR. Ser. khim. no.9:1725-1726 S '64. (MIRA 17:10)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.

L 12012-65 EPA(s)-2/ENT(m)/EPF(c)/EPR/ENP(j)/T Pc-4/Pr-4/Ps-4/Pt-10 AFNL/
B.D./SSD/ASD(a)-5/ESD(dp)/ESD(t) WW/RM S/0062/64/000/010/1769/1775
ACCESSION NR: AP4047395

AUTHOR: Slinkin, A. A.; Dulov, A. A.; Rubinshteyn, A. M.

TITLE: Magnetic and electrical properties of chelate polymers **B**

SOURCE: AN SSSR. Investiya. Seriya khimicheskaya, no. 10, 1964,
1769-1775

TOPIC TAGS: chelate polymer, coordinator polymer, organic semicon-
ductor, semiconducting polymer, magnetic property, electrical
property

ABSTRACT: A study has been made of the dependence of electrical and
magnetic properties of earlier prepared coordination polymers of
methane with Ni^{+2} , Co^{+2} .

electrical properties. Electrical characteristics were
semiconductors.

Card 1/2

L 12012-65

ACCESSION NR: AP4047395

pendent on the metal and the molecular weight, indicating the govern-
ing role of structure in giving rise to semiconductor properties.
of magnetic susceptibility and EPR spectra showed that
magnetism was determined not

round in the
Interpretation of the results involved less on
plexes. Orig. art. has: 2 tables.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo
Akademii nauk SSSR (Institute of Organic Chemistry, Academy of
Sciences, SSSR)

SUBMITTED: 23Jan63

ATD PRESS: 3122

ENCL: 00

SUB CODE: OC, EM

NO REF SOV: 009

OTHER: 001

Cerd 2/2

RUBINSHTEYN, A.M.; YAKERSON, V. *et al.*

Catalytic ketonization of acetic acid over a mixed $\text{CaCO}_3\text{-LiCo}_3$
catalyst. *Kin. i kat.* 5 no.2:519-523 Moscow '64. (MIRA 17:8)

1. Institut organicheskoy khimii imeni Melnikova AN SSSR.

RUBINSHTEYN, A.M.; YOSHT, F. [Iost, F.]; SLIKIN, A.A.

X-ray diffraction and magnetochemical studies of Ni-Al O catalysts for simultaneous hydrogenation and dealkylation of cresols.
Izv.AN SSSR.Ser.khim. no.2:248-257 F '64. (MIRA 17:3)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR i Institut teoreticheskikh osnov khimicheskoy tekhniki Akademii nauk Chekhoslovatskoy Sotsialisticheskoy Respubliki, Praga.

ACCESSION NR: AP4010036

S/0062/64/000/001/0026/0034

AUTHOR: Dulov, A. A.; Slinkin, A. A.; Rubinshteyn, A. M.

TITLE: Electric and magnetic properties of products from the thermal treatment of polymethylvinylketone

SOURCE: AN SSSR, Izvestiya. Ser. khim., no. 1, 1964, 26-34

TOPIC TAGS: polymethylvinylketone, electric properties, magnetic properties, crystallinity, electric conductance, EPR spectra, polymethylvinylketone adsorption of oxygen, semiconductor, p type semiconductor, n type semiconductor, polymethylvinylketone thermal treatment

ABSTRACT: The electric conductance, nature of the EPR signal and crystallinity of polymers obtained by heating polymethylvinylketone at temperatures up to 870C in a nitrogen, hydrogen or air atmosphere were studied. The electric properties and nature of the effect of oxygen on the EPR signal and conductance differ sharply in polymethylvinylketone heated at low temperatures (400—500C) from those

Cord: 1/3

ACCESSION NR: AP4010036

of the polymer heated to 670—870C: with increasing temperature oxygen has an increasing effect on the intensity and width of the EPR signal; the effect of oxygen on the conductance decreases; asymmetric EPR lines appear because of the graphitic nature acquired by the polymer particles. Below 570C the polymer, in a vacuum, behaves as an n-type semiconductor; in air, as the p-type. From the effects on the EPR spectra it is concluded that the adsorption of oxygen at temperatures up to 500C is due to chemisorption, but in the 570—600C range it is both chemical and physical adsorption. In the polymer treated at low temperature, the electric conductance is strongly affected by oxygen and is determined by the electron exchange between areas with a high degree of conjugation in the polymer. On increasing the temperature of treatment, the formation of unpaired electrons in the polymer is not due to a rupture of the C - C bonds, but to the formation of complexes with transfer of the charge. Orig. art. has: 7 figures and 3 tables.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii Nauk SSSR (Institute of Organic Chemistry, Academy of Sciences SSSR)

Card 2/3

ACCESSION NR: AP4010036

SUBMITTED: 01Jul63

DATE ACQ: 14Feb64

ENCL: 00

SUB CODE: MA, PH

NO REF SOV: 009

OTHER:: 006

Card 3/3

DULOV, A.A.; SLINKIN, A.A.; RUBINSHTEYN, A.M.

Electrical and magnetic properties of the products of curing of
polymethyl vinyl ketone. Izv.AN SSSR. Ser.khim. no.1:26-34
Ja '64. (MIRA 17:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.

YOSHT, F. [Jost, F.]; KLYACHKO-GURVICH, A.L.; RUBINSHTEYN, A.M.

Texture of Ni-Al₂O₃ catalysts for a simultaneous hydrogenation and dealkylation of cresols. Izv. AN SSSR. Ser. khim. (MIRA 17:1)
no.12:2105-2110 D '63.

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR i Institut teoreticheskikh osnov khimicheskikh protsessov Akademii nauk Chekhoslovatskoy Sotsialisticheskoy Respubliki, Praga.

RUBINSHTEYN, A. M.; DULOV, A. A.; PRIBYTKOVA, N. A.

Effect of K_2O on the activity, selectivity, and electrical properties of alumina-chromia catalysts. Izv AN SSSR Ser Khim no. 4:604-613 Ap '64. (MIRA 17:5)

1. Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR.

DULOV, A.A.; SLINKIN, A.A.; RUBINSHTEYN, A.M.

Electric and magnetic properties of thermally treated
polymers based on ferrocene. Vysokom. soed. 5 no.10:1441-
1446 0 '63. (MIRA 17:1)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo AN
SSSR.

DULOV, A.A.; SLINKIN, A.A.; RUBINSHTEYN, A.M.; KOTLYAREVSKIY, I.L.

Electric conductivity, electron paramagnetic resonance spectra,
and the structure of polyarylene-polyacetylenes. Izv. AN SSSR.
Ser. khim. no.11:1910-1920 N '63. (MIRA 17:1)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo AN SSSR.
i Institut khimicheskoy kinetiki i goreniya Sibirskogo otdeleniya
Akademii nauk SSSR.

AKIMOV, V.M.; KLYACHKO-GURVICH, A.L.; RUBINSHTEYN, A.M.;
SIMULIN, Yu.N.; SLINKIN, A.A.; SEMINA, R.T.

Study of catalysts for ammonia synthesis with different
degrees of reduction. Izv. AN SSSR. Ser. khim. no.12:2208-
2210 D '63. (MIRA 17:1)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

RUBINSHTEYN, A.M.; SLOVETSKAYA, K.I.; BRUYEVA, T.R.

Adsorption of benzene within a temperature range of 20 to 450°C on chromia-alumina-potassium catalysts. Dokl. AN SSSR 151 no.3: 580-583 J1 '63. (MIRA 1689)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.
Predstavleno akademikom B.A. Kazanskim.
(Benzene) (Adsorption) (Catalysts)

S/195/63/004/001/008/009
E075/E436

AUTHORS: Rubinshteyn, A.M., Slovetskaya, K.I., Bruyeva, T.R.

TITLE: The influence of the activation and regeneration processes of alumina-chromia catalysts on their structure and the degree of surface hydration

PERIODICAL: Kinetika i kataliz, v.4, no.1, 1963, 139-142

TEXT: The authors investigated the catalysts obtained by simultaneous precipitation of $\text{Cr}(\text{OH})_3$ and $\text{Al}(\text{OH})_3$ with NH_4OH from nitrate solutions, before and after use in catalytic reactions. Cr_2O_3 - Al_2O_3 dehydrogenation and dehydrocyclization catalysts were also investigated. The aim of the work was to obtain information on the state and quantity of H_2O held by catalysts prepared and treated by various methods. The surface area and pore dimensions of the catalysts did not change on successive oxidation - reduction processes. To determine H_2O held by the catalysts, they were tested to 500 - 1100°C and the water absorbed by MgClO_4 . Since the removal of H_2O was difficult, it was concluded that it existed in the form of OH groups attached to the surfaces. Reduction of the oxidized catalyst samples for Card 1/2

The influence of the activation ...

S/195/63/004/001/008/009
E075/E436

3 hours at 450°C increased the number of OH groups on the surfaces, the hydration of the catalysts containing 23% Cr₂O₃ being stronger than that of the catalysts with 13% Cr₂O₃. The catalysts oxidized with O₂ contained the smallest quantity of OH groups. Reduction with hydrocarbon vapors introduced less H₂O on to the surfaces than the reduction with H₂. There are 3 tables.

ASSOCIATION: Institut organicheskoy khimii im. N.D.Zelinskogo
AN SSSR (Institute of Organic Chemistry imeni
N.D.Zelinskiy AS USSR)

SUBMITTED: November 14, 1961

Card 2/2

SLINKIN, A.A.; FEBOROVSKAYA, E.A.; RUBINSHTEYN, A.M.

Electron paramagnetic resonance spectra and magnetic
susceptibility of alumina-chromia catalysts. Kh.i.kat.
4 no.2:230-238 Mr-Apr '63. (MIRA 16:5)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR.
(Catalysts—Magnetic properties) (Chromium oxides—Spectra)

ACCESSION NR: AP3002300

S/0062/63/000/006/1140/1141

AUTHOR: Slinkin, A. A.; Dulov, A. A.; Rubinshteyn, A. M.

TITLE: Catalytic properties of chelate polymers

SOURCE: AN SSSR. Izv. Otdeleniye khimicheskikh nauk, no. 6, 1963, 1140-1141

TOPIC TAGS: chelate polymers, polymerization, styrene, catalytic polymerization, nickel, cobalt, magnesium, copper, zinc

ABSTRACT: Because of the special nature of the electrical, magnetic, and catalytic properties of chelate polymers, the catalytic activity of polymers of the structure indicated in formula (1) of the Enclosure have been studied. The polymers were synthesized at the laboratory of V. V. Korshak at the Institut elementoorganicheskikh sovedineniy AN SSSR (Institute of Organoelemental Compounds AN SSSR). Study of their catalytic activity in styrene polymerization was made at the Institut organicheskoy khimii imeni N. D. Zelinskogo AN SSSR (Institute of Organic Chemistry AN SSSR). The polymerization was carried out under static conditions with vigorous

Card 1/3

ACCESSION NR: AP3002300

agitation at 77.4 plus or minus 0.05C with 0.1 g of the powdered chelate polymer catalyst and either 22 ml of pure styrene or a 1/1 solution of styrene in toluene. The reaction kinetics were observed dilatometrically. It was found that the rate of formation of polystyrene ranged from 0.020 to 0.067 g/hr for pure styrene and from 0.007 to 0.018 g/hr for the 1/1 solution. The catalytic activity of the chelates decreased in the order Cu sup +2 is greater than Mn sup +2 is greater than Ni sup +2; the chelates containing Zn or Co were inactive. Orig. art has: 3 formulas and 1 table.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR
(Institute of Organic Chemistry AN SSSR)

SUBMITTED: 23Jan63

DATE ACQ: 16Jul63

ENCL: 01

SUB CODE: 00

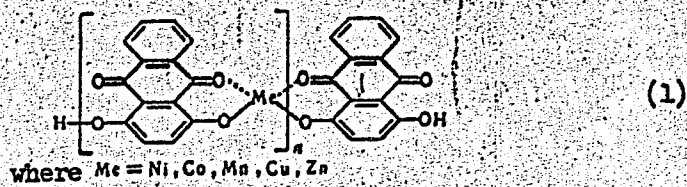
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OTHER: 000

Card^{2/3}

ACCESSION NR: AP3002300

ENCLOSURE: 01



Card 3/3

SLINKIN, A.A.; DULOV, A.A.; RUBINSHTEYN, A.M.

Catalytic properties of chelate polymers. Izv. AN SSSR. Otd.khim.nauk
no.6:1140-1141 Je '63. (MIRA 16'7)

1. Institut organicheskoy khimii imeni Zelinskogo AN SSSR.
(Chelates) (Catalysis)

RUBINSHTEYN, A.M.; SLOVETSKAYA, K.I.; KLYACHKO-GURVICH, A.L.; BRUYEVA, T.R.

Adsorption of cyclohexane on a chromia-alumina-potassium catalyst.
Dokl. AN SSSR 151 no.2:343-346 J1 '63. (MIRA 16:7)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
Predstavleno akademikom B.A.Kazanskim.
(Cyclohexane) (Adsorption) (Catalysts)

RUBINSHTEYN, A.M.; KLYACHKO-GURVICH, A.L.

Simple and rapid methods for determining the surface area of catalysts. Kin.i kat. 3 no.4:599-601 J1-Ag '62. (MIRA 15:8)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR.
(Catalysts)

YAKERSON, V.I.; FEDOROVSKAYA, E.A.; KLYACHKO-GURVICH, A.L.;
RUBINSHTEYN, A.M.

Vapor phase catalytic ~~keton~~ization of CH_3COOH over tetravalent
metal oxides and BeO. Kin. i kat. 2 no. 6:907-915 N-D '61.
(MIRA 14:12)

1. Institut organicheskoy khimii AN SSSR.
(Acetic acid) (Ketones)
(Catalysis)

KOTLYAREVSKIY, I.L.; FISHER, L.B.; DULOV, A.A.; SLINKIN, A.A.; RUBINSHTEYN,
A.M.

Synthesis and some physical properties of poly-p-diethynylbenzene.
Vysokom.soed. 4 no.2:174-181 F '62. (MIRA 15:4)

1. Institut khimii Vostochno-Sibirskogo filiala AN SSSR i Institut
organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Benzene)

DULOV, A.A.; SLINKIN, A.A.; LIOGON'SKIY, B.I.; RUBINSHTEYN, A.M.;
Prinimal uchastiye BERLIN, A.A.

Conjugation and orderliness as factors affecting semiconducting
properties of polymers. Dokl. AN SSSR 143 no.6:1355-1357 Ap
'62. (MIRA 15:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR i
Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom
B.A.Kazanskim.
(Polymers) (Semiconductors) (Chemical structure)

AKIMOV, V.M.; LITVIN, Ye.F.; RUBINSHTEYN, A.M.; FREYDLIN, L.Kh.

Phase transitions during the preparation of Ni-MgO catalysts
by the decomposition of oxalates in a hydrogen stream. Izv.AN
SSSR.Otd.khim.nauk no.10:1892-1894 0 '61. (MIRA 14:10)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Nickel oxalate) (Magnesium oxide)

RUBINSHTEYN, A.M.; SLOVETSKAYA, K.I.; BRUYEVA, T.R.

Adsorption of 2-methyl-3-butene on a dehydrogenation catalyst.
Kin.i kat. 2 no.4:584-589 JI-Ag '61. (MIRA 14:10)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR.
(Butene) (Dehydrogenation)

RUBINSHTEYN, A.M.

38374
S/190/62/004/002/002/021
B110/B101

15 8340

AUTHORS:

Kotlyarevskiy, I. L., Fisher, L. B., Dulov, A. A.,
Slinkin, A. A., Rubinshteyn, A. M.

TITLE:

Synthesis and some physical properties of poly-p-diethynyl
benzene

PERIODICAL:

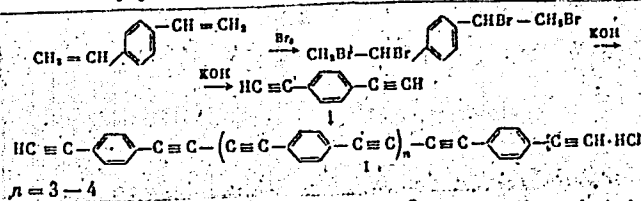
Vysokomolekulyarnyye soyedineniya, v. 4, no. 2, 1962,
174 - 181

TEXT: Poly-p-diethynyl benzene with alternating ternary bonds and phenylene
rings was synthesized from p-diethynyl benzene according to Yu. S. Zal'kind
(Zh. obshch. khimii, 6, 530, 1936). The diethyl benzene mixture obtained
during styrene production was dehydrogenated to divinyl benzene, brominated,
dehydrobrominated, and polycondensed in water-alcohol or water-dioxane at
20 - 40°C in the presence of CuCl, NH₄Cl, and O₂ to orange-red, powdery
oligomer (I) insoluble in water and organics.

Card 1/5

Synthesis and some physical...

3337h
S/190/62/004/002/002/021
B110/B101



It explodes under rapid heating to 120 - 130°C in N₂ flow, but is no longer explosive in the form of pressed tablets up to 140°C in N₂ flow. Thermo-gravimetric and quantitative studies showed that the color change (to black) at 400°C was not due to decomposition but to intramolecular polymerization and structuration processes. The conductivity of tablets pressed at 5000 atm was examined with direct current at 5·10⁻³ mm Hg. The tablets were heated in N₂ flow for 20 hr. The conductivity is described by: $\sigma = \sigma_0 \exp(-E/kT)$. Resistance and activation energy of conductivity decrease with increasing heating temperature (220 - 600°C) $\sigma \approx 10^{-2} \text{ ohm}^{-1} \cdot \text{cm}^{-1}$; $E \approx 0.1 \text{ eV}$ at 600°C. Ultraviolet irradiation of a sample heated at 220°C raises the conductivity

Card 2/5

33374

S/190/62/004/002/002/021
B110/B101

Synthesis and some physical...

reversibly by some orders. This effect decreases with increasing heating temperature (400°C) and disappears at 500 and 600°C completely. The sign of the thermo-emf and the reversible resistance decrease during oxygen adsorption confirm the hole character of the conductivity. The specific magnetic susceptibility of the initial oligomer determined between 20 and 160°C at $H = 3500 - 4500$ oersteds was $\chi = -0.4 \cdot 10^{-6}$, after pressing at 5000 atm: $\chi = -0.2 \cdot 10^{-6}$. The maximum number of unpaired electrons exists on heating to 220°C, maximum χ value at 400°C, while ferromagnetic H dependence on χ was observed. The intensities of the epr signal as dependent on heating (2 hrs) in vacuo and N_2 (0.5% O_2) pass through a maximum at ~220°C. X-ray studies with an YPC-55(URS-55) device showed increasing crystal formation (favored by pressing) with increasing heating temperature. The electric and magnetic properties of slightly heated amorphous samples are determined by individual unpaired electrons and energetic barriers between the loosely bound, conjugated sections while ultraviolet irradiation increases the number of current carriers. At higher temperatures, the individual conjugated sections are combined to microcrystalline domains, and the number of electrons which have not yet entered the domain of strong interaction

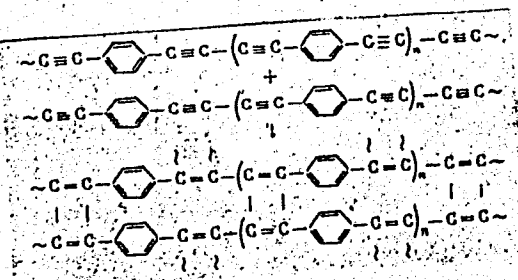
Card 3/5

33374

S/190/62/004/002/002/021
B110/B101

Synthesis and some physical...

decreases. At a certain stage, further crystal growth gives rise to formation of diamagnetic graphite structures. At 400, 500, 600°C, electric resistance and activation energy of conductivity decrease with increasing heating temperature due to the presence of strongly interacting electrons. Two types of structurally different polymers are likely to exist. The conversion of the orange-colored, explosive initial polymer at 200°C is likely to proceed according to:



Card 4/5

33374

S/190/62/004/002/002/021
B110/B101

Synthesis and some physical...

At higher temperatures, domains are formed with ferromagnetic electron interaction due to cross linking which are superposed by diamagnetic interaction on further crystallization. Tal'roze is mentioned. There are 4 figures, 4 tables, and 14 references: 11 Soviet and 3 non-Soviet. The two references to English-language publications read as follows: A. S. Hay, J. Org. Chem., 25, 1275, 1960; D. D. Eley et al., Disc. Faraday Soc., 28, 55, 1959.

ASSOCIATION: Institut khimii Vostochno-sibirskogo filiala AN SSSR (Institute of Chemistry of the East Siberian Branch AS USSR). Institut organicheskoy khimii im. N. D. Zelinskogo AN SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy AS USSR)

SUBMITTED: January 30, 1961

Card 5/5